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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,346	02/21/2002	Osamu Baba	020123	6089

23850 7590 08/01/2003

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EXAMINER

VU, QUANG D

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/078,346

Applicant(s)

BABA ET AL.

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendment filed on 04/30/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “wiring layer (a layer formed on the insulating interlayer [19]) (figure 5)” has been used to designate both “separation electrode (18)” and “wiring layer (23)”. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “common electrode” must be shown or the feature(s) canceled from the claim(s). The drawing (figure 6) also needs to show that the common electrode in claim 5. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Objections*

3. Claim 1 is objected to because of the following informalities: There is no antecedent basis for the claimed limitation “the additional insulating” as claimed in the claim 1. The word “the” should be deleted. Appropriate correction is required.

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4. Claims 1-10 are objected to because of the following informalities: The phrase "...separation electrode..." fails to clarify whether it is being referred to the electrode.

Appropriate correction is required.

5. Claim 6 is objected to because of the following informalities: Claim 6, in lines 2-4, the phrase "...the separation electrodes are provided on one of the insulating interlayers, and are electrically interconnected by wiring extended on the insulating interlayer" fails to clarify the separation electrodes are electrically interconnected by wiring extended on the insulating interlayer. The specification (figure 5) discloses the wiring layer (a layer formed on the insulating [19]), which is used to designate both "separation electrode [18]" and "wiring layer [23]". Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-6 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,170,154 to Swarup in view of US Patent No. 5,631,478 to Okumura.

Swarup (figure 5B) teaches a multilayered wiring structure for high structure for high frequency semiconductor devices, comprising:

a substrate (146)

a ground plate (144) formed above the substrate (146), having a potential fixed at the ground potential;

a plurality of wiring layers, each of which is alternately stacked with an insulating interlayer formed above the substrate (146), the wiring layers combine with the ground plate to form transmission lines; and

at least one separation electrode (a patterned layer formed on the ground [152]) being selectively provided on the insulating interlayer (150), the at least one separation electrode (a patterned layer formed on the ground [152]) having a potential fixed at the ground potential (152),

wherein the at least one separation electrode (a patterned layer formed on the ground [152]) is formed near the crossing portion ([152] and [24]) where the wiring layers mutually cross, with insulating interlayers provided therebetween.

Swarup differs from the claimed invention by not showing a semiconductor substrate. However, Okumura (figure 5A) teaches a semiconductor substrate (111) (column 5, lines 11-12). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Okumura into the device taught by Swarup because the semiconductor substrate is a well known in the art.

Regarding claim 2, Swarup differs from the claimed invention by not showing the length and width dimensions of the at least one separation electrode are sufficiently smaller than the length of each of the wiring layers used in forming the transmission lines above the semiconductor substrate so as to not significantly interfere with transmission line characteristics of the wiring layers. It would have been obvious to one having ordinary skill in the art at the

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time the invention was made for the length and width dimensions of the at least one separation electrode are sufficiently smaller than the length of each of the wiring layers used in forming the transmission lines above the semiconductor substrate so as to not significantly interfere with transmission line characteristics of the wiring layers, since it has been that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 3, Swarup teaches additional crossing portions ([152] and [24], [152] and [28]) where the wiring layers mutually cross, wherein each of the crossing portions had an individual separation electrode (a patterned layer formed on the ground [152]).

Regarding claim 4, Swarup teaches the separation electrodes (left and right portion of patterned layer formed on the ground [152]) are electrically interconnected.

Regarding claim 5, Swarup teaches the separation electrodes (left and right portion of patterned layer formed on the ground [152]) have a potential, which is fixed at the ground potential (152) by a common electrode (a patterned layer formed on the ground [152]).

Regarding claim 8, Swarup teaches a single electrode (a patterned layer formed on the ground [152]) is provided for all of the crossing portions ([152] and [24], and [152] and [28]).

Regarding claim 6, Swarup teaches the separation electrodes (left and right portion of patterned layer formed on the ground [152]) are provided on one of the insulating interlayers (150), and are electrically interconnected by wiring extended (left and right portion of patterned layer are separation electrodes and the middle portion of patterned layer is a wiring connecting between left and right portion of patterned layer) on the insulating interlayer (150).

***Allowable Subject Matter***

8. Claims 7, 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: The prior art, including the most closely related art, US Patent No. 6,170,154 to Swarup, does not anticipate or render obvious a multilayered wiring structure for high frequency semiconductor devices, comprising particularly: the separation electrodes are provided on different insulating interlayers, and are electrically interconnected by at least one through hole. The second major difference between the claimed invention and the prior art is a multilayered wiring structure, comprising: the crossing portions are positioned at different levels, and the separation electrodes are provided on those of the insulating interlayers which are provided for all of the crossing portions. The third major difference between the claimed invention and the prior art is a multilayered wiring structure, comprising: the crossing portions are positioned at different levels, and the single separation electrode is provided on one of the insulating interlayers which is provided for all of the crossing portions.

***Response to Arguments***

10. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

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*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 703-305-3826. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

qv  
July 25, 2003

  
**SHOUXIANG HU**  
**PRIMARY EXAMINER**